NUTRITIVE VALUE OF CASHEW, CANARY AND COCONUT PROTEIN

by: Oey Kam Nio*, Lie Goan-Hong*, J. Herlinda*, G. Sihombing–Nainggolan*, Risnawati Aminah* and Sumardi**

ABSTRAK

Biji jambu mete, biji kenari dan kelapa adalah bahan makanan yang dikenal dan dimakan di Indonesia. Produksi kelapa di Indonesia cukup besar, tapi protein kelapa masih banyak terbuang dalam bentuk ampas atau bungkil.

Keterangan mengenai nilai gizi protein ketiga bahan makanan tersebut masih sangat kurang. Dilaporkan penentuan nilai gizi protein dengan cara penentuan asam amino dan percobaan pemberian sebagai makanan pada anak tikus putih.

Hasil penelitian menunjukkan, bahwa kualitas protein kelapa dan jambu mete adalah baik, setaraf dengan protein susu, dan kualitas protein kenari setaraf dengan protein kacang kedele. Protein kelapa yang "tua-di-pohon", mempunyai kualitas yang lebih baik daripada protein kelapa yang kurang tua.

INTRODUCTION

Cashew, canary and coconut are seeds very rich in oil. Of these three nuts, only the coconut is commercially cultivated in large estates and it is by far the most important source of cooking oil for the population in Indonesia. The cashew-nut, wellknown as an expensive delicacy, has become more and more available in Java as the tree is propagated and planted for reforestation of the dry and arid limestone hills of the southern part of Central Java.

The canary nut is probably known only in South East Asia and the Southern Pacific region. The nut is used in expensive cakes. According to Heijne (1950), in the eastern part of Indonesia (Moluccas), canary nuts are commonly used in various native sago recipes. Regarding the nutritive value of the proteins of cashew and canary nuts, no data are as yet found in the Indonesian literature. Therefore an attempt is made to obtain this information through chemical analysis and rat-feeding experiments.

The coconut protein, as reported in our previous paper (Oey, K.N. et al. 1977), is of good quality. Desiccated coconut is now used by the biscuit factories in Jakarta for the production of coconut biscuits ("sagon cookies"). Coconut flakes, also from the desiccated coconut industry, are not yet used in the human food industry, but are sold locally for animal feed. New investigations on desiccated coconut and coconut flakes were undertaken to determine their amino acid content and to confirm the high biological value of their proteins.

MATERIALS AND METHODS

Peeled cashew and canary nuts were bought in a market in Central Jakarta. In the labora-

---

– The result of this investigation was presented at the Third Symposium of the Federation of Asian and Oceanian Biochemists, held in Denpasar (Bali), Indonesia, June 24–27, 1981.

– This investigation was carried out in cooperation with the ASEAN Project on Soybean and Proteinrich Foods, Indonesia.

– As in Indonesia the interest for ratfeeding experiments (PER and NPU) is increasing, the authors are of the opinion it might be very useful and instructive to include more details of the ratfeeding trials.

* Nutrition Research Unit Diponegoro, National Institute for Health Research and Development, Ministry of Health, Jakarta.

** National Institute for Chemistry, Indonesian Institute of Sciences (LIPI) -- Bandung.

tory, these samples were put in a drying oven at 60°C for about one day.

Desiccated coconut and coconut flakes were obtained from a factory in the northern part of Celebes. The desiccated coconut received was as fine, dried gratings, white in color, and no rancidity was observed. The coconut flake was as thin flake, light yellowbrown in colour, having a very acceptable slightly toasted taste and flavour. No rancidity was observed.

Coconut flake is a waste-product from the desiccated coconut industry. Desiccated coconut which does not meet the standard for export is pressed by the factory for its edible oil. The residue, in the form of flakes, is sold locally (in North Celebes) for feed. Unfortunately no detailed information on the manufacturing process of desiccated coconut and flakes could be obtained.

As the available quantity of desiccated coconut was insufficient for our experimental purpose, dried coconut gratings were prepared in our Nutrition Unit from apparently mature coconut bought from a market in Central Jakarta. The fresh coconut meat was grated and then dried in the oven at a low temparature of 50°C for about one day avoiding discolouring (browning) of the product.

a. Chemical analysis

The determination of the proximate principles and the crude fibre content was carried out according to AOAC methods (1975). The amino acid analysis was carried out at the National Institute for Chemistry in Bandung, using the automated ion-exchange chromatographical method as described by Anderson and Jackson (1977).

b. Ratfeeding Experiments

1. Description of the animal experiments.
   All the rat feeding experiments were carried out using young weanling albino rats bred in our Nutrition Unit since 1954 and fully kept inbred. These stockrats are called "Lembaga Makanan Rakyat" strain-Wistar derived. In the Protein Efficiency Ratio (PER) determination, for each test diet 10 weanling male rats of 28 days old of about the same weight were used. Each rat was housed individually in one cage during 4 weeks, and the feeding was ad libitum (freely allowed). In the Net Protein Utilization determination, 4 weanling albino rats, sex ignored, from 4 different litters of 30 days old were put in one cage and treated as one group. The feeding period lasted 10 days only and usually at least 4 groups of 4 rats were used for each test-diet.
2. Identification of methods of feeding experiment.
   The determination of PER was carried out according to standard methods as recommended by AOAC (1975) and of NPU according to Miller (1963) and Miller & Bender (1955). These methods were since long used in our Nutrition Unit and has been reported in previous reports and articles from our Unit.
3. Preparation of experimental diets.
   The experimental diets where possible were fed at the recommended level of 10% protein and 10% fat.
   The highest protein level which could be obtained with the rice diet was 6% only. Experimental diets based on rice alone or coconut gratings alone were therefore prepared at this protein level of 6% for comparison. Two other diets mixed with soy were also prepared, viz. rice + soy and coconut gratings + soy, both with a protein level of 10% and with the same protein ratio of 50 : 50.

The composition of the experimental diets used in the PER determination is given in the Addendum table 1.

As the three nuts mentioned are very high in fat, the fat content has to be reduced so that test-diets with 10% protein and 10% fat can be prepared. Small amounts of chopped nuts were pressed between thick layers of fat absorbing paper using a simple local-made screwpress. This was done two times, each for a period of 24 hours. The coconut grating was pressed only once. The various batches of pressed material were then thoroughly mixed and the fat and protein content determined.

As standardized casein is not available locally, fresh skim milk powder from New Zealand is used as a substitute to serve as a positive control.

RESULTS

a. Chemical Composition.

The values obtained for the proximate principles of the three nuts can be seen from tabel 1. (See table 1).

Protein : The protein content of the canary and cashew nut is in the range of 13–15%, while coconut has the lowest protein content of about 6% only. However, the partially defatted coconut flake has a much higher protein content, viz. 17% against 6% for desiccated coconut, all on the same dry basis.

Fiber : The fiber content of cashew and canarium nut is about 3.5%, while coconut is higher, viz. about 4.5%. When processed into flakes, the fiber content becomes very high, viz. about 10%.

Table 1 Proximate principles of Cashew, Canarium nut and various Coconut products.

Food item	Moisture %	Protein (N×5.30) %	Fat %	Carbohydrate by diff. %	Ash %	Crude fiber %
Cashew nut. (Anacardium Occidentale) peeled, raw, dry	5.1	14.9	50.7	27.1	2.2	3.4
Canarium nut. (Canarium Commune) peeled, raw, dry	4.6	13.0	69.1	9.8	3.5	3.5
Coconut. (Cocos nucifera)						
a. Coconut grating .						
– fresh	46.9	3.4	34.7	14.0	1.0	2.5
– dried in oven	6.2	6.0	61.3	24.7	1.8	4.4
b. Desiccated Coconut (ex factory in North Sulawesi)	4.8	6.3	64.4	22.8	1.7	4.4
c. Coconut flakes (ex factory in North Sulawesi)	5.8	17.4	11.0	60.4	5.4	9.9

Fat : In the natural product, the fat content of the three nuts is very high, all above 50%. On the same dry basis, canary nut has however the highest fat content with close to 70%, followed by coconut with close to 65% and lastly, cashew nut with approximately 50% fat. Coconut flake, a residual product, has a fat content of 11%, compared to the fat content of 65% in the original desiccated coconut.

b. Amino acid analysis.

The results of the amino acid analysis are presented in Table 2.

The amino acid analysis was carried out by the National Institute for Chemistry, Indonesian Institute of Sciences (LIPI), Bandung. Dried coconut grating, laboratory prepared, was unfortunately not analysed for its amino acid content.

Table 2 Amino acid content of Cashew, Canarium and Coconut expressed in mg/g of total nitrogen.

Amino acids mg/gN	Provisional amino acid pattern FAO/WHO 1972	Cashew nut	Canarium nut	Coconut	
				Desiccatet	Flake
Isoleucine	250	266	210	265	230
Leucine	440	422	410	455	390
Lysine	340	280	240	325	316
Methionine	–	>70	>110	>145	>115
Cystine	–	–	–	–	–
Total Sulfurcontaing amino-acids)	220	–	–	–	–
Phenylalanine	–	292	288	284	258
Tyrosine	–	190	325	170	132
Total aromatic amino-acids	380	482	613	454	390
Threonine	250	198	199	245	190
Tryptophan	65	105	140	–	–
Valine	310	370	246	282	288

Table 3 Results of Rat-feeding Experiments (PER & NPU) with Cashew, Canarium and various Coconut products.

Product :	Protein Efficiency Ratio (PER)		Net Protein Utilization-standard (10% protein) NPU-st.	Digestibility D	Biological value BV
	10% Protein level	6% Protein level			
Skim milik (positive control)	3.2	–	74	97	78
Cashewnut	3.3	–	77	92	84
Canarium nut	2.5	–	63	92	69
Coconut :					
– desiccated (factory)	–	–	71	86	83
– flake (factory)	3.0	–	73	82	89
– coconut grating (laboratory prepared)	–	1.9	–	–	–
Rice	–	2.0	–	–	–
Soy	2.1	–	–	–	–
Coconut grating + Soy	3.0	–	–	–	–
Rice + Soy	3.1	–	–	–	–

c. Rat feeding experiments.

The result of the rat feeding experiment is presented in Table 3. (See table 3). Details of the experiments, viz. the composition of the experimental diets, the average food intake and the gain in weight can be found in the tables attached as Addendum. (Addendum tables 1, 2 & 3).

1. *Protein Efficiency Ratio.*

The PER-values obtained for skim-milk, cashew nut and coconut flake were all above 3.0. Canary nut had a somewhat lower value of 2.5. The laboratory prepared coconut grating and also rice, both fed as a single protein source at the level of 6 % only, gave a PER value of 1.9 for coconut grating and 2.0 for rice.

Soybean fed at 10 % protein level gave a PER-value of 2.1. But when soybean was mixed with either coconut grating or rice (protein ratio 50 : 50) and fed at 10 % protein level, the PER-value of these mixtures were high and were the same, viz. 3.0 and 3.1 (See table 3).

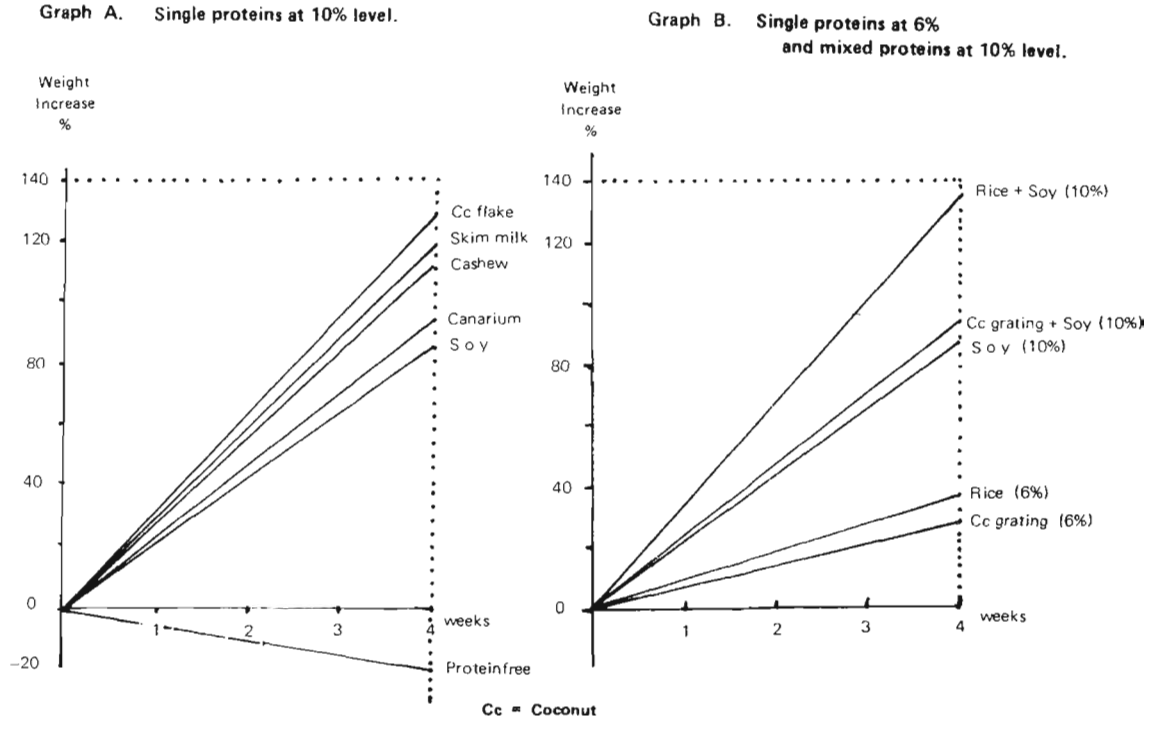
2. *Growth.*

The growth-curves of the young weanling albino rats fed the various experimental diets in the PER-study, can be seen from the graphs (See graphs).

From graph A can be seen that the growth promoting effect of the proteins from coconut flake, skim-milk and cashew nut fed at 10 % level are good and of the same rank. Somewhat lower are the proteins from canary nut and soy. The ranking of the growth-curves compares very well with the PER-values obtained. (See table 3).

From graph B can be seen, that the

Graph. **Growthcurves of young weanling albino rats (PER – study) fed experimental diets consisting of single and mixed proteins at the level of 10% or 6%**



growth of the young rats on the diet with coconut grating (6 % protein) is somewhat lower than the growth of the rats on the rice diet (at the same 6 % protein level). The growth-rates of the mixtures of either coconut grating or rice with soy are better than that of soy alone and far much better than that of the test-diets prepared from rice or coconut gratings only. (See graph B).

3. *Net Protein Utilization.*

Skim-milk, serving as the positive control, gave a NPU-standard value of 74. Cashew nut had the highest NPU-standard value of 77, while desiccated coconut and coconut flake gave values of 71 and 73. Canarium nut had the lowest NPU-standard value of 63 only.

The digestibility of the three nuts were all above 82, in the range of 82 – 92.

DISCUSSION

The results of our animal experimentation show that the quality of the protein of cashew nut and coconut (desiccated and flakes) is as high as that of cow's milk protein. The protein of the canary nut has a lower quality, but still it is as good as soy protein. These observations are not in full agreement with the data on the essential amino-acids both from the literature as well as from our own analysis.

From the good growth of the experimental rats it can be expected that the amino-acid pattern of cashew and coconut must resemble or be almost the same as that of cow's milk protein. This means that both cashew and coconut protein can not be limiting in either lysine or in the total sulfur-containing amino acids as reported in the cited literature. (See table 4). We may expect that newer chemical analyses will give a lysine content in the range of 340–360 mg and value for the total sulfur-containing amino-acids very close to 220 mg per g of nitrogen.

For the canary nut the value for lysine is reportedly low (deficient), while no data are available on the total sulfur-containing amino-acids. The results of our feeding experiments show that the protein of the canary nut is of the same quality as soy protein, which means that lysine will not be limiting and the content will be of the same order as that of soy protein, viz. approx. 400 mg per g of nitrogen. The total sulfur-containing amino-acids will be deficient just like soy with approx. 165 mg per g nitrogen. It is hoped that in the near future new findings will clear this matter.

The laboratory prepared coconut grating has a somewhat lower protein quality than rice, with PER values of respectively 1.9 and 2.0 fed at 6% protein level. When soy was added to either coconut grating or rice so that the total protein content of the experimental diets became 10% and the protein ratio 50 : 50, the PER-values obtained were higher and were almost the same for the 2 mixtures viz. respectively, 3.0 and 3.1. The slope of the growth-curve of rice plus soy is definitely higher than that of the slope of coconut gratings plus soy. This may be explained by the higher food intake of the rats on rice + soy as compared to the food-intake of the rats on coconut grating + soy.

We may conclude, that our laboratory prepared sample of coconut grating has a protein quality almost the same as that of rice protein, with lysine being the first limiting amino-acids. As the samples of desiccated coconut and coconut flakes from the factory in North Celebes have a protein which is not limiting in either lysine or the sulfur-containing amino-acids, we have to conclude that these 2 samples are completely different from our laboratory prepared sample of coconut grating. The explanation for the difference in the protein quality especially in the amino acid pattern may probably be found in the state of maturity of the coconut. According to Ochse et al. (1961) the fruits of the coconut mature 16 to 18 months after pollination of the flowers. According to FAO/WHO Table of Food Composition (1972), the lysine content of the coconut meat, depending on the age of the coconut (6 to 12 months) vary from 253 mg to

Table 4 Comparison of the content of some essential amino-acids in some foodstuffs as obtained from different sources.

Foodstuffs or p roduct		Lysine	Methio-nine	Cysti-ne	Total S--c. a. a.	Threo-nine	Trypto-phan
1 Provisional amino acid scoring pattern (FAO/WHO 1972)	a)	340	–	–	220	250	65
2. Milk, cow's, skim	a)	559	220	24	252	283	81
3. Cashew nut (Anacardium	a)	306	56	69	125	250	100
Occidentale)	b)	287	94	–	–	203	115
	d)	280	> 70	–	–	198	105
4. Coconut (Cocos nucifera)							
– Dried kernel	b)	220	120	76	196	212	–
– Flour, defatted	a)	254	156	25	181	188	–
– Coconut skim milk Spray dried	c)	288	81	106	188	150	56
- Desiccated coconut	d)	325	> 145	–	–	245	–
– Coconut flakes	d)	316	> 115	–	–	190	-
5. S o y	a)	391	84	81	165	247	76
6. Canarium nut							
Papo canary (C. Schwe in furthii)	b)	181	194	–	–	200	--
Kenari (C. Commune)	d)	240	> 110	–	–	199	140
7. R i c e, brown or hulled	a)	248	141	104	245	243	78

a) FAO/HEW. 1972. Food Composition Table.
b) FAO. 1972. Nutritional Studies no. 24.
c) Hagenmaier et. al. 1974. converted to mg/per g N.
d) Data from our investigation.

416 mg per g of nitrogen. Our coconut gratings were prepared in the laboratory from fresh, mature coconuts usually sold for household and kitchen use in the Jakarta market. They were certainly not completely ripe and dry on the coconut tree. These conditions are required for nuts to be used for oil and copra production and certainly for the processing of desiccated coconut. It is mentioned in the literature (see table 4) that the coconut protein is limiting in lysine and the total-S-containing amino acids, the same as found with our sample of coconut grating. As the sample of coconut gratings was prepared not from tree-dry coconut, it can be speculated that the nuts used as samples referred to in the literature must be of the same maturity and condition as our coconut used for the preparation of the gratings. From these findings we may cautiously conclude that the quality of the protein of coconut meat is highly dependent on its maturity or ripeness.

CONCLUSION

From the results of our investigation can be

concluded that the protein quality of cashewnut and mature coconut meat is high and of the same rank as cow's milk protein. The canary nut has a protein quality somewhat lower than that of cashew and coconut-meat; its protein quality is of the same rank as soyprotein.

These commodities are very good supplements to cereals, improving the nutritive value of the mixture. They are already wellknown as human food but their consumption is very restricted due to reasons of limited availability and cost. Products from the coconut industry using high technology are desiccated coconut and coconut-flake. Just like the case is with desiccated coconut, it is hoped that the food industry can make good use also of the residual product coconutflake with its following characteristics as a low fat content, high in protein of good quality and high in dietary fibre.

REFERENCES

1. Anderson, R., D. Annette and N. Jackson. 1977. J. Chromatogr. 133, 447, 1977.
2. Association of Official Agricultural Chemists. 1975. Official Methods of Analysis, 10th Ed. 1975. Washington D.C.
3. Food and Agriculture Organization. 1972. Amino Acid Content of Foods and Biological Data on Protein. Nutritional Studies no. 24. FAO, Rome, Italy, 1972. p. 64 & 66.
4. Food and Agriculture Organization – U.S. Dept. of Health, Education and Welfare. 1972. Food Composition Table for Use in East Asia, 1972. p. 210.
5. Hagenmaier, R., K.F. Mattil and C.M. Cater. 1974. Dehydrated Coconut Skim Milk as a food product : Composition and functionality. J. of Food Science, 39. p. 196–199. 1974.
6. Heijne, K. 1950. De Nuttige Planten van Indonesie. N.V. Uitgeverij W. van Hoeve, 's-Gravenhage/Bandung, 3rd Ed. 1950. p. 970 for Cashewnut and p. 873 for Canary nut.
7. Miller, D.S. 1963. Determination of Net Protein Utilization Using Rat Body N-Technique. In : Evaluation of Protein Quality, NRC Publication no. 1100, National Academy of Sciences, USA, 1963, p. 34.
8. Miller, D.S. and A.F. Bender. 1955. The Determination of the Net Utilization of Protein by a Shortened Method. Brit. J. Nutr. 9, 382, 1955.
9. Ochse, J.J., M.J. Soule Jr., M.J. Dijkman and C. Wehlburg. 1961. Tropical and Subtropical Agriculture. Vol. II. p. 1035. The Macmillan Company. New York, 1961.
10. Oey K.N., G.H. Lie, J. Herlinda and Risnawati Aminah, 1977. Coconut Products as a Potential Source of Protein for the Indonesian Diet. Proceedings Seminar Teknologi Pangan III, Bogor, 21–23 January, 1977, p. 230.

Addendum Table 1. Composition in grams of Experimental Diets used for PER determination

XP—diets / Components	Protein content %	Protein free diet g	Skim-milk diet g	Cashew nut g	Canarium nut g	Coconut flakes g	Coconut grat. g	Rice g	Soy g	Coconut grat. + Soy g	Rice + Soy g
Fat added	–	100	98	–	14	40	–	100	50	–	60
Starch, *	–	720	549	479	595	316	312	–	557	230	–
Glucose	–	150	50	50	50	50	–	–	100	50	50
Saltmixture	–	20	20	20	20	20	20	20	15	20	20
Celluflour	–	10	20	20	20	–	–	–	–	–	–
Vitamin mixture	–	+	+	+	+	+	+	+	+	+	+
Skim milk powder	36.0	–	263	–	–	–	–	–	–	–	–
Cashew nut, pressed	23.2	–	–	431	–	–	–	–	–	–	–
Canarium nut, pressed	35.5	–	–	–	301	–	–	–	–	–	–
Coconut flake	17.4	–	–	–	–	574	–	–	–	–	–
Coconut grating, dried, pressed	8.7	–	–	–	–	–	668	–	–	558	–
Rice	7.0	–	–	–	–	–	–	880	–	–	728
Soy, boiled, dried	36.0	–	–	–	–	–	–	–	278	142	142
Total in grams :		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Nitrogen Content of XP-diet as analysed g%		–	1.485	1.774	1.962	1.887	1.094	1.042	1.701	1.786	1.664
Conversion factor		–	6.38	5.30	5.30	5.30	5.30	5.95	5.71	5.43	5.83
Protein Content of XP-diet g%		–	9.5	9.4	10.4	10.0	5.8	6.2	9.7	9.7	9.7

* gelatinized, dried.

Addendum Table 2 : Results of Protein Efficiency Ratio Determinations of Cashew and Canarium nuts, Coconut products and mixtures.

Experimental Diet	Number of rats	Protein content of XP diet as analyzed	Average Body weight at		Average increase in body weight at end in		Avg. Total Food Intake per rat (4 weeks)	Avg. Total Protein Intake per rat (4 weeks)	Protein Efficiency Ratio
			Start	End					
	n	%	g	g	g	%	g	g	PER ± SD
A. Protein Free	10	–	50.3	33.1	– 17.2	– 34.2	64.8	0	–
B. Skim milk	10	9.5 (Nx6. 38)	50.1	110.4	60.3	120.5	196.9	18.71	3.22 ± 0.23
C. Cashew nut (pressed 2 x)	10	9.4 (Nx 5.30)	49.5	105.9	56.5	114.3	183.3	17.25	3.28 ± 0.23
D. Canarium nut (pressed 2x)	10	10.4 (Nx 5.30)	49.5	97.1	47.6	96.6	183.3	19.12	2.49 ± 0.18
E. Coconut flake (factory pressed)	10	10.0 (Nx 5.30)	49.8	112.5	62.7	126.2	207.8	20.78	3.02 ± 0.22
F. Coconut grating dried, (pressed)	6	5.8 (Nx 5.30)	49.8	61.8	12.1	25.3	110.3	6.39	1.89 ± 0.41
G. Rice, raw	10	6.2 (Nx 5.95)	49.9	68.7	18.8	37.7	148.2	9.20	2.04 ± 0.58
H. Soy, boiled dried	10	9.7 (Nx 5.71)	48.0	90.1	42.1	87.8	202.7	19.66	2.14 ± 0.20
I. Coconut grating + Soy	5	9.7 (Nx 5.43)	49.6	96.6	46.8	93.8	160.9	15.56	3.00 ± 0.31
J. Rice + Soy	10	9.7 (Nx 5.83)	49.9	117.4	67.5	135.3	224.1	21.63	3.12 ± 0.28

Addendum Table 3 : Results of Net Protein Utilization – Standard Determinations of Cashew and Canary nuts, Desiccated Coconut and Coconut Flake

XP Diet	Nitrogen cont. as analyzed	Protein XP-diets	Avg. at End of Expt. (10 days)		Group Body N		Group N–intake		Net Protein Utilization		Digestibility		Biological Value	
			group Food-intake	Weight Increm	Indiv. value	Avg.	Indiv. value	Avg.	Indiv. value	Avg	Indiv. value	Avg.	Indiv. value	Avg.
	g%	g%	g	%	grams		grams							
1 Skim Milk	1.494	9.53 (Nx 6.38)	223.5	23 7	7 78 7 52 7.13 7.49	7.48	3.54 3.10 3.21 3.47	3.33	73 76 72 75	74	99 96 99 93	97	74 79 73 81	78
2. Cashew Nut (pressed 2x)	1.496	7 93 (Nx 5.30)	247.8	38.4	7.52 6.60 7.25 7.39 7 49 7.11	7.23	3.62 3 27 3.88 3 96 3.77 3.73	3.71	77 78 78 75 74 77	77	88 93 88 100 86 95	92	88 84 89 74 86 81	84
3. Canary Nut (pressed 2x)	1.703	9.02 (Nx 5.30)	221.6	26.3	6.54 6.47 7.12 6.96 7.11 6.62	6 80	3.57 3,53 4.03 3.83 3.99 3.70	3.78	59 67 64 66 60 64	63	88 86 93 94 88 100	92	67 78 68 70 68 64	69
4. Desiccated Coconut (pressed 2x)	1.785	9.46 (Nx 5.30)	154.9	11.8	7.61 7.24 6.37 6.94 6.70	6.97	3.19 2.80 2.41 2.81 2.65	2.77	76 75 64 73 69	71	94 94 83 84 76	86	81 80 77 87 91	83
5 Coconut Flake (factory-pressed)	1.685	8.93 (Nx 5.30)	274.8	34.2	8 77 8.60 8 76 8.05 7.96	8.43	4 45 5.13 4.42 4.66 4.57	4 65	80 66 82 69 67	73	84 79 86 80 82	82	96 85 95 86 82	89